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TITLE: Job application distributing system among a plurality of computers, job application distributing method and recording media in which job application distributing program is recorded

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Brief Summary Text - BSTX (16):

According to a further aspect of the present invention, there is provided the job application distributing system among a plurality of computers, wherein the main computer load information collecting means collects a CPU usage rate of the main computer at each constant time; and the computer specifying means multiplies a CPU idle time by a CPU performance value in each of the plurality of computers when the CPU usage rate of the main computer exceeds a preset threshold, the computer specifying means specifies the computer having the largest multiplied value as the computer having the allowance of the load.

Brief Summary Text - BSTX (18):

According to a further aspect of the present invention, there is provided the job application distributing system among a plurality of computers, wherein the main computer load information collecting means collects a CPU usage rate of the job application which is executes on the main computer and has a high priority of the usage of a CPU and the CPU usage rate of the entire main computer at each constant time; and the computer specifying means judges whether or not the CPU usage rate associated with the high CPU usage priority job application exceeds the threshold when the CPU usage rate of the entire main computer exceeds the threshold, the computer specifying means allows the objective computer deciding means to decide a movement of any other job application than the high CPU usage priority job application to the other computer when the CPU usage rate does not exceed, the computer specifying means allows the objective computer deciding means to decide the movement of all the job application to the other computer when the CPU usage rate associated with the high CPU usage priority job application also exceeds the threshold.

Brief Summary Text - BSTX (24):

According to a further aspect of the present invention, there is provided the method of distributing a job application among a plurality of computers, wherein the main computer load information collecting step includes a step of collecting a CPU usage rate of the main computer at each constant time; and the

computer specifying step includes a step of multiplying a CPU idle time by a CPU performance value in each of the plurality of computers when the CPU usage rate of the main computer exceeds a preset threshold, the computer specifying means specifies the computer having the largest multiplied value as the computer having the allowance of the load.

Brief Summary Text - BSTX (26):

According to a further aspect of the present invention, there is provided the method of distributing a job application among a plurality of computers, wherein the main computer load information collecting step includes a step of collecting a CPU usage rate of the job application which is executes on the main computer and has a high priority of the usage of a CPU and the CPU usage rate of the entire main computer at each constant time; and the computer specifying step includes a step of judging whether or not the CPU usage rate associated with the high CPU usage priority job application exceeds the threshold when the CPU usage rate of the entire main computer exceeds the threshold, the computer specifying step includes a step of allowing the objective computer deciding means to decide a movement of any other job application than the high CPU usage priority job application to the other computer when the CPU usage rate does not exceed, the computer specifying step includes a step of allowing the objective computer deciding means to decide the movement of all the job application to the other computer when the CPU usage rate associated with the high CPU usage priority job application also exceeds the threshold.

Brief Summary Text - BSTX (32):

According to a further aspect of the present invention, there is provided the recording media recording media, wherein the main computer load information collecting processing collects a CPU usage rate of the main computer at each constant time; and the computer specifying processing multiplies a CPU idle time by a CPU performance value in each of the plurality of computers when the CPU usage rate of the main computer exceeds a preset threshold, the computer specifying processing specifies the computer having the largest multiplied value as the computer having the allowance of the load.

Brief Summary Text - BSTX (34):

According to a further aspect of the present invention, there is provided the recording media, wherein the main computer load information collecting processing collects a CPU usage rate of the job application which is executes on the main computer and has a high priority of the usage of a CPU and the CPU usage rate of the entire main computer at each constant time; and the computer specifying processing judges whether or not the CPU usage rate associated with the high CPU usage priority job application exceeds the threshold when the CPU usage rate of the entire main computer exceeds the threshold, the computer specifying processing allows the objective computer deciding processing to decide a movement of any other job application than the high CPU usage priority job application to the other computer when the CPU usage rate does not exceed, the computer specifying processing allows the objective computer deciding processing to decide the movement of all the job application to the other

computer when the CPU usage rate associated with the high CPU usage priority job application also exceeds the threshold.

Detailed Description Text - DETX (9):

Referring to FIG. 6, a load monitor execution flag 61, which represents whether or not the load monitoring is performed, indicates "ON" being representative of performing the monitoring (when the monitoring is not performed, "OFF" is indicated and a specified value is "OFF"). When the load monitoring is performed, a load monitor time interval 62, which is a time interval for a monitoring operation, indicates "1,000 msec". A CPU monitor flag 63, which represents whether or not a usage state of a CPU is monitored, indicates "ON" being representative of performing the monitoring (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). A CPU load threshold 64, which represents the threshold of a CPU usage rate as a criterion for deciding whether or not the distribution is performed, indicates "80%". In the first embodiment, the load monitor item is set to the CPU usage rate. However, the load monitor item can be appropriately set in accordance with the contents of the job application to be distributed and a system source which is most necessary when the job application is performed, such as a memory usage amount, a BKST usage amount, an I/O load to a disk device, a task usage rate of various service programs and a network channel usage rate.

Detailed Description Text - DETX (29):

Referring to FIGS. 1 and 4, when the job application execution computer deciding rule table 9 is as the case shown in FIG. 6 in the step 401, the computer specifying means 8 obtains the information that the CPU usage state is monitored since the CPU monitor flag 63 indicates "ON". Since the CPU load threshold 64 is "80%", the computer specifying means 8 collects the information which indicates the rule that the load is distributed when the CPU usage rate exceeds 80%. Next, when the load information table 7 is as the case shown in FIG. 8 in the step 402, the computer specifying means 8 obtains the information which indicates the CPU usage rate 82 of the other computer 13 is "50%" when the CPU usage rate 82 of the main computer 1 is "92%".

Detailed Description Text - DETX (30):

In the first place, the computer specifying means 8 turns "ON" the load monitor flag 91 since the load monitor information is present in the load information table 7. Moreover, since the CPU usage rate of the main computer 1 exceeds the threshold "80%" in accordance with the CPU usage rate in the obtained information, the load of the main computer 1 is higher. Accordingly, it is determined that the job application should be distributed into the main computer 1. Furthermore, since the CPU usage rate of the other computer 13 is "50%", the other computer 13 has the allowance of the load compared to the main computer 1. Accordingly, the computer specifying means 8 turns "ON" the distribution execution flag 92. The identification number "2" of the other computer 13 is stored in the job application execution computer number 93.

Detailed Description Text - DETX (45):

Referring to FIG. 11, a load monitor execution flag 111 indicates whether or not the load monitoring is performed. The load monitor execution flag 111 indicates "ON" which represents that the monitoring is performed (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). A load monitor time interval 112 is indicative of the time interval for performing the monitor operation when the load monitoring is performed. The load monitor time interval 112 indicates "1,000 msec". A CPU monitor flag 113 indicates whether or not the CPU usage state is monitored. The CPU monitor flag 113 indicates "ON" which represents that the monitoring is performed (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). The CPU load threshold 64 represents the threshold of the CPU usage rate as the criterion for performing the distribution. The CPU load threshold 64 indicates "80%". Furthermore, a CPU load allowance 115 indicates the degree by which the CPU usage rate of the other computer 13 must be lower than that of the main computer 1 when the job application is distributed into the other computer 13. The CPU load allowance 115 indicates "10%".

Detailed Description Text - DETX (47):

Referring to FIGS. 1 and 10, the computer specifying means 8 decides whether or not the CPU usage rate of the main computer 1 exceeds the threshold of the CPU load (step 1001). When the CPU usage rate exceeds the threshold, it is decided whether or not the CPU usage rate of the other computer 13 is lower than that of the main computer 1 (step 1002). When the CPU usage rate is lower, the CPU usage rate difference between the main computer 1 and the other computer 13 is obtained (step 1003). It is decided whether or not the difference is equal to or more than a value of the CPU load allowance (step 1004). When the difference is equal to or more than the value of the CPU load allowance, the identification information of the other computer 13 and the information as to the job application distribution are stored in the computer information table 10 so as to move the job application prior to scheduling to the other computer 13 having the allowance of the CPU (step 1005). When the difference is less than the value of the CPU load allowance, the identification information of the main computer 1 and the information as to the job application distribution are stored in the computer information table 10 so as to execute all the job application in the main computer 1 (step 1006).

Detailed Description Text - DETX (63):

In the fourth embodiment of the present invention, the load information table 7 of the first embodiment stores the CPU usage rate of each computer and an index indicative of a CPU performance of each computer (CPU performance value) therein. When the CPU usage rate of the main computer 1 exceeds the threshold, the computer specifying means 8 multiplies the rate of an idle time of the CPU by the CPU performance value of each computer in each computer with reference to the load information table 7. The computer specifying means 8 decides to execute the job application in the computer having the largest value.

Detailed Description Text - DETX (66):

Referring to FIGS. 1 and 15, the computer specifying means 8 decides whether or not the CPU usage rate of the main computer 1 exceeds the CPU load threshold

(step 1501). When the CPU usage rate exceeds the threshold, the rate of the CPU idle time is obtained from the CPU usage rate of each computer. The rate is multiplied by the CPU performance value of each computer (step 1502). The resultant product of the main computer 1 is compared to that of the other computer 13 (step 1503). When the product of the other computer 13 is larger than that of the main computer 1, the computer specifying means 8 decides that the other computer 13 has the larger allowance of processability. The information for moving the job application to the other computer 13 is stored in the computer information table 10 (step 1504). On the contrary, when the product of the other computer 13 is smaller than that of the main computer 1, the information for executing the job application in the main computer 1 is stored in the computer information table 10 (step 1505).

Detailed Description Text - DETX (84):

Referring to FIGS. 1 and 20, the computer specifying means 8 judges whether or not the CPU usage rate of the main computer 1 exceeds the CPU load threshold (step 2001). When the CPU usage rate exceeds the threshold, the computer specifying means 8 judges whether or not the other computer 13 has more CPU allowance (step 2002). When the other computer 13 has less allowance, the subsequent load monitor item is compared, where it is judged whether or not the memory usage rate of the main computer 1 exceeds the threshold (step 2003). When the memory usage rate exceeds the threshold, it is judged whether or not the other computer 13 has more memory allowance (step 2004). When the other computer 13 has less allowance, the identification information of the main computer 1 is stored in the computer information table 10 so as to execute the job application in the main computer 1 (step 2005). In the step 2002 or 2004, when it is decided that the other computer 13 has more allowance, the identification information of the other computer 13 is stored in the computer information table 10 (step 2006).

Detailed Description Text - DETX (87):

Referring to FIG. 21, after a CPU monitor flag 213 and a CPU load threshold 214, a memory monitor flag 215 indicates "ON" which represents that the memory usage rate is monitored (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). A memory load threshold 216 indicates the threshold of a memory usage state as the criterion for performing the distribution. The memory load threshold 216 indicates "50%". The priority for monitoring the load is determined in the order that the memory load follows the CPU load. When three or more load monitor items are set, the memory load threshold 216 of FIG. 21 is stored and subsequently the contents of another monitor item and the corresponding threshold are stored.

Detailed Description Text - DETX (109):

Referring to FIG. 29, a load monitor execution flag 291 indicates whether or not the load monitoring is performed. The load monitor execution flag 291 indicates "ON" which represents that the monitoring is performed (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). A short period load monitor time interval 292 is the time interval for performing the load monitoring when the load monitoring is performed, and it indicates the time interval when the monitoring is performed for the short

period. The short period load monitor time interval 292 indicates "1,000 msec". A long period load monitor time interval 293 indicates the time interval when the monitoring is performed for the long period. The long period load monitor time interval 293 indicates "2,000 msec". A CPU monitor flag 294 indicates whether or not the CPU usage state is monitored. The CPU monitor flag 294 indicates "ON" which represents that the monitoring is carried out (when the monitoring is not performed, "OFF" is indicated and the specified value is "OFF"). A short period CPU load threshold 295 indicates the threshold of the CPU usage rate for the short period as the criterion for performing the distribution. The short period CPU load threshold 295 indicates "80%". A long period CPU load threshold 296 indicates the threshold of the CPU usage rate for the long period as the criterion for performing the distribution. The long period CPU load threshold 296 indicates "50%".